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ACCESSION NR: AP5019226

mechanism is suggested according to which NaCl, which initially is a dielectric, [illegible] by the shock wave front into a semiconducting state with donor levels. The concentration of the donors generated by the shock wave front during plastic deformation reaches 10^{-3}. Free carriers in the conduction band are generated as a result of thermal excitation of electrons from the donor levels. Orig. art. has: 13 formulas and 3 figures. [CS]

ASSOCIATION: none

[illegible] ENCL: 00 SUB CODE: OP, SS

NO REF SOV: 014 OTHER: 020 ATD PRESS: 4051

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APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000823910002-6"

KOLMEROVA, Czeslawa; KRAUSE, Mieczyslaw

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Moscow-Leningrad, 1948

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

5 A

A 63

4361. Calculation of Mean Brownian Area. A. Kolmogoroff and M. Leontowitsch. *Phys. Zeits. d. Sowjetunion*, 4. 1. pp. 1–13, 1933. *In German.*—The problem solved is the calculation of the probable area on any plane, covered in unit time by the projection of the path of a finite particle undergoing Brownian motion. J. H. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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N'yuton i sovremennoye matematicheskoye myshleniye. V kn. "moskovskiy universitet-pamyati Isaaka N'yutona". M., Izd. un-ta (1946(, 47-52.
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Markushevich, A. I.,
Rashevskiy, P. K.
Moscow-Leningrad, 1948

KOLMOGOROV, A.N. (con't)

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KOLMOGOROV, A. N. (con't)

Matematika. BSE, T. 38 (1938), 359-401.

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N'yuton i sovremennoye matematicheskoye myshleniye. V SB. Mockovskiy Universitet - pamyati n'yutona. M., Izd. un-ta (1946), 27-42.

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KOLMOGOROV, A. N.

"The Local Structure of Turbulence in an Incompressible Viscous Liquid," Doklady AN USSR, Vol XXX, no 4, 1941.

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

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532.517.4 1042

Equations of turbulent flow of an incompressible viscous liquid. Kolmogorov, A. N. J. Phys. USSR, 6, 5, pp. 227-228, 1942.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

KOLMOGOROV, A. N., Academician

Mbr., Dept. Physico-Mathematical Sci., Acad. Sci. (1944)

"Fundamental Problems in the field of Mathematics and Science," Vest. Ak. Nauk SSSR, No. 11-12, 1944

BR-52059019

KOLMOGOROV, A.N.

Kolmogorov, A. N. On the proof of the method of least squares. Uspehi Matem. Nauk (N.S.) 1(11), no. 1, 57–[illegible] (1946). (Russian)

The author criticizes general textbook expositions of the [illegible] of least squares on two counts; they fail to indicate that the Gaussian error law seriously overestimates the reliability of the results derived from small samples and they derive their main results by a cumbersome set of calculations rather than by the lucid methods of vector algebra. The paper is written to show how this condition can be corrected.

[illegible] vector methods are illustrated as follows. [illegible] relation $y=\sum [illegible]$ [illegible] unknown constants. We make N experimental observations on the y and x's, thus determining a set of $n+1$ vectors in Euclidean N-space, with components η_r, ξ_{ir}, $r=1, \cdots, N\geqq n$. We suppose that the rank of the matrix [illegible]. The linear vector equation $\eta=\sum_{j=1} a_j\xi_j$ cannot in general be satisfied; we seek, therefore, the most reasonable set of values α_j to approximate the a_j. Write $\eta=y+\Delta$, $\eta^*=\sum_{j=1}^{n}\alpha_j\xi_j$ and $\epsilon=\eta-\eta^*$. It is clear that η^* belongs to the linear subspace L spanned by the x_j. Denoting scalar products by $[\ ]$, we see that the condition $[\epsilon\epsilon]=$ minimum is equivalent to the condition that η^* is the orthogonal projection of η on L, whence $[\epsilon\xi_j]=0$ follows. A further immediate consequence is that $\sum_{j=1}^{n}[\xi_i\xi_j]\alpha_j=[\xi_i\eta]$, $i=1, \cdots, n$. These are the normal equations for the α_j and have a solution since determinant $[\xi_i\xi_j]\neq 0$.

Next, define a set of vectors $u_i\epsilon L$ by $[u_i\xi_j]=\delta_{ij}$ (Kronecker symbols) and write $[u_iu_j]=q_{ij}$. Then $\alpha_j=a_j+[\Delta u_j]$. If we suppose that the components Δ_r of Δ are random variables [illegible] independent [illegible] and with [illegible] the appropriate mean value operator), we find that $M\alpha_i=a_i$ and $M(\alpha_i-a_i)(\alpha_j-a_j)=q_{ij}s^2$. Similarly, one derives $M\epsilon=0$ and $M[\epsilon\epsilon]=(N-n)s^2$.

The χ^2-distribution and Student's distribution are derived and there are brief discussions of confidence limits and of the significance of the dispersion matrix q_{ij}.

A. A. Brown (Alexandria, Va.)

Mathematical Reviews, Vol 8 No. [illegible]

1ST AND 2ND DIGITS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

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On the law of [illegible] in the case of turbulent flow [illegible] A. N. C.R. Acad. Sci. URSS, [illegible] (No. [illegible]) [illegible] of the [illegible] type of formula for the [illegible] of resistance, [illegible] in terms of the Reynolds' number R (Re) in the case of tur- [illegible] viz. 1/√λ = A log(Re√λ) + B (1), [illegible] a formula of the type 1/√λ = A log Re + B (2), C.R. Acad. Sci. URSS, [illegible] (No. 7) (1946). The author shows that [illegible] analysis leads not to formula (2) but to formula (1) for large Reynolds' numbers. Deviations from this law occur only when the value of Re is of the order 1 000 or 10 000. J. S. G. T.

Editorial Board, Dok, AN (Deputy Responsible Editor 1945 - Jan. 1947; Mbr. Nov. 1947)

Mbr. Ed. Board, Matemat. Sbor, - 1942 - 49.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

KOLMOGOROV, A.N.

Kolmogorov, A. N., Petrov, A. A., and Smirnov, Yu. M. A formula of Gauss in the theory of the method of least squares. Izvestiya Akad. Nauk SSSR Ser. Mat. 11, 561–566 (1947). (Russian)

In articles 39–40 of Gauss's Theoria Combinationis Observationum Erroribus Minimis Obnoxiae there occurs the inequality $\rho\rho/\pi \leq \sum(a\alpha+b\beta+c\gamma+\cdots)^2 < \pi$. Gauss failed to notice that this inequality can be sharpened. The purpose of the paper is to show that $\rho\rho/\pi \leq \sum(a\alpha+b\beta+c\gamma+\cdots)^2 \leq \rho$ and that this latter inequality cannot be improved.

W. E. Milne (Corvallis, Ore.)

Source: Mathematical Reviews, Vol 9 No. 7

KOLMOGOROV, A-N

Kolmogoroff, A. N., and Dmitriev, N. A. Branching stochastic processes. C. R. (Doklady) [illegible] (N.S.) 56, 5-8 ([illegible]).

Suppose that objects are divided into n types. There are transitions in which each object goes into one or more objects of each of the n types, in accordance with some probability law. The transitions are independent of each other and of past transitions. If $\alpha(t)$ is the vector whose kth component is the number of objects of type k at time t, the α process is then a Markov process, and the standard theory of Markov processes can be applied, but [illegible] methods adapted to this special case. When $n=1$, the process becomes the birth process studied by many authors [see, for example, R. A. Fisher, The Genetical Theory of Natural Selection, Oxford University Press, 1930]. The authors find a functional equation and a differential equation for the generating function of the $\alpha(t)$ distribution, and show how simply the differential equation can be used to find the transition probabilities of a simple birth process examined by Arley [On the Theory of Stochastic Processes and their Application to the Theory of Cosmic Radiation, Copenhagen thesis, 1943; these Rev. 7, 209].

J. L. Doob (Urbana, Ill.).

Source: Mathematical Reviews, 1948, Vol 9, No. 1

KOLMOGOROV, A.N.

Kolmogorov, A. N., and Savost'yanov, B. A. The calculation of final probabilities for branching random processes. Doklady Akad. Nauk SSSR (N.S.) 56, 783–786 (1947). (Russian)

Soit $P_k^\alpha(t)=P(T_k\to\alpha_1T_1+\cdots+\alpha_nT_n|t)$ la probabilité qu'une particule du type T_k donne, après K générations, α_1 particules du type $T_1, \cdots, \alpha_n$ particules du type T_n. La fonction génératrice $F_k(t;x)=\sum_\alpha P_k^\alpha(t)x_1^{\alpha_1}\cdots x_n^{\alpha_n}$, $F_k(1;x)=f_k(x)$, est donnée par

$$F_k(t+1;x)=f_k\{F_1(t;x),\cdots,F_n(t;x)\}.$$

En introduisant s'il le faut un type fictif dont les particules demeurent invariables, que $f_k(0,\cdots,0)=0$. Un groupe $T_{k_1},\cdots,T_{k_m}$ est dit fermé si les particules qui en font partie ne peuvent produire que des particules du même groupe; on suppose le système total indécomposable en groupes fermés. Un groupe est dit final si (a) il est fermé, (b) chacune de ses particules produit une particule exactement, (c) il ne contient aucun sous-groupe ayant les propriétés (a), (b). A l'intérieur d'un groupe final les transformations constituent un cas particulièrement simple des chaînes de Markoff. Soit $\varphi_k(u_1,\cdots,u_s)=\sum_\beta q_k^\beta u_1^{\beta_1}\cdots u_s^{\beta_s}$ la fonction génératrice des $q_k^\beta=P(T_k\to\beta_1\Psi_1+\cdots+\beta_s\Psi_s|\infty)$ en décomposant le système total en groupes finals $\Psi_r=\{T_{r_1},\cdots,T_{r_{m_r}}\}$, $r=1,\cdots,s$, et en types $T_{\theta_1},\cdots,T_{\theta_h}$ n'appartenant pas à des groupes finals; si on écrit T_{rm} au lieu de T_k, on écrira φ_{rm} au lieu de φ_k et f_{rm} au lieu de f_k. Théorème. Les relations

$$\varphi_{\theta_m}=f_{\theta_m}(\varphi_1,\cdots,\varphi_n),\qquad m=1,\cdots,n_0;$$

$$\varphi_{r_m}=u_r,\quad 0\leq u_r<1,\ m=1,\quad n_r\ r=1,$$

$$\ldots,\qquad k=1,\cdots,n_k$$

déterminent univoquement les valeurs des φ_k pour les u donnés. On montre sur un exemple, étudié en détail, comment le cas de t continu peut se ramener au cas discret.

M. Loève (New York, N. Y.).

Mathematical Reviews, 1948, Vol 9, No. 3

KOLMOGOROV, A. N.

Theory of Sets ... y of Functions of Real Variables

Aleksandrov, P. and Kolmogorov, A. N. Vvedenie v teoriyu mnozestv i teoriyu funkcii. Cast' pervaya. [Introduction to the Theory of Sets and the Theory of Functions. Part One.] —Aleksandrov, P. S. Vvedenie v obščuyu teoriyu množestv i funkcii. [Introduction to the General Theory of Sets and Functions]. Gosudarstv. Izdat. Tehn.-Teor. Lit., Moscow-Leningrad, 1948. 411 pp.

This volume is the first of a two-volume treatise dealing with the foundations of latter-day mathematical analysis, designed for students of mathematics in Soviet universities and pedagogical institutes. The thesis is advanced that the broadest notions of set, topological space, continuity, and integral should find a place in the curriculum for all students of higher mathematics; that the study of these concepts only for the line and for n-space is, in view of the development of mathematics in the past half century, an anachronism. Part one (written by Aleksandrov) deals with topics relating generally to cardinal number and continuity. Part two (written by Kolmogorov) is to treat the theory of integration and its applications to probability, functional analysis, dynamical systems, and the like. The volume under review furnishes powerful arguments in favor of the authors' thesis. It requires very little in the way of previous training

Mathematical Reviews, Vol 12 No. 9

P. S. Aleksandrov Card 1 of 2

[illegible] the reader's part, covers the essential features of classical theory of real functions, introduces the reader to a large number of modern concepts, and is written in a highly [illegible] indeed elegant style. All of the abstract concepts presented are illuminated by well-chosen examples. An outline of the topics handled will indicate the plan of the book. Chapter I: basic notions about sets; mappings; countable sets; ordered sets; cardinal equivalence of sets; the Schroeder-Bernstein theorem. Chapter II: definition of the real number system in terms of Dedekind cuts in the rational number system; elementary properties of sets of real numbers. Chapter III: basic properties of well-ordered sets; the axiom of choice; the well-ordering theorem (Zermelo's third proof is given); standard theorems on and classification of infinite cardinal numbers. Chapter IV: elementary topology of the line and plane (all usual concepts are introduced and all standard theorems are proved). Chapter V: continuous real valued functions on the line; functions of bounded variation; the Weierstrass approximation theorem for closed intervals (Bernstein's proof is given; this is one of the few proofs in the book not admitting generalization to the most general context); derivatives. Chapter VI: definition of metric spaces; open and closed sets; Borel sets; subspaces, dense and nowhere dense sets; connectedness; countable bases; continuous mappings of metric spaces; general topological spaces; separation axioms; Urysohn's imbedding theorem. Chapter VII: compact and complete metric spaces; compact topological spaces. In conclusion, one may observe that a book of this calibre, if generally accessible to [illegible] mathematical [illegible], might well have a deep and beneficial influence [illegible] mathematical education. [illegible] *Hew*[illegible]

[illegible]

Mathematical Reviews, Vol. 12 No. 4

P. S. Aleksandrov Card 2 of 2

KOLMOGOROV, A. N.

Kolmogorov, A. N. A remark on the polynomials of P. L. Čebyšev deviating the least from a given function. Uspehi Matem. Nauk (N.S.) 3, no. 1(23), 216–221 (1948). (Russian)

Haar's necessary and sufficient conditions for the uniqueness of the polynomial in $f_1(x)$, $P_n(x)=c_1f_1(x)+\cdots+c_nf_n(x)$, deviating the least from a given function $F(x)$ of a real variable x, are extended to a complex variable.

E. Kogbetliantz (New York, N. Y.).

Source: Mathematical Reviews, Vol 10, No. 1

Kolmogorov, A. N.

Kolmogorov, A. N. Obituary: Evgenii Evgenievič Sluckii. Uspehi Matem. Nauk (N.S.) 3, no. 4(26), 143-151 (1 plate) (1948). (Russian)

Smirnov, N. Obituary: Evgenii Evgen[illegible] Sluckii. 1880 1948 [illegible]

Source: Mathematical Reviews, Vol 10 No. 3

Gnedenko, B. V., and Kolmogorov, A. N. ... raspredeleniya dlya summ ... nezavisimyh ... "Limit Distributions for Sums of Independent Random Variables." ... Moscow-Leningrad, 1949. 264 ...

This book is based on courses given by the ... Moscow and Lwow universities ... rate of progress ... theory of probability is illustrated by the fact ... of the results in the book have been obtained in the last 15 years (principally by Doeblin, Feller, Lévy, and the authors). Furthermore, this book is twice as long as Khintchine's ... book on the ... Limit Theorems for Sums of Independent Random Variables, GONTI, Moscow-Leningrad, 1938].

The first three chapters constitute an introduction ... Chapter I: Probability distributions, random variables, mathematical expectations. Since only sums of ... random variables are considered ... deep analysis ... sary in this chapter. In fact all the results of the ... be stated in terms of distributions and their ... without mentioning measure ... However ... give a brief survey of the measure-theoretic foundations of probability, omitting proofs, ... adding an interesting (however) restriction ... unnecessary, as it seems to ... theory is defined ... basic measure space. Probability ... on which a ... in an abstract space of points ... which satisfies ... defined with maximum value ... valued measure ... conditions. If x is any number ... A is a ... ion, that is a random variable ... $B \supset A$ is open, $\Pr\{x(w) ...$ $\Pr\{x(w)\} \in B$ ... set A ... which the left ... the equality ... this hypothesis has certain ... in study ... of subspace on the line, defined ... $x(w)$. The ... always satisfied, for example ... space is ... separable metric space and ... given probability ... is a complete measure of B... Chapter ... tions in R^1 and their characteristic functions ... included.) Chapter III: Infinitely divisible ... Derivation of the Lévy formula for the characteristic function of such a distribution, ... heuristic ... processes with independent increments.

Chapters IV–VI comprise the second section: ... theorems. Chapter IV: General limit theorems ... independent summands. Concept of (asymptotically) infinitely small summands; conditions necessary and sufficient that their sums, when properly centered and scaled, have some, or a given, (infinitely divisible) limiting distribution. Chapter V: Convergence to the normal, Poisson ... distributions. Chapter VI: Limit theorems for cumulative ...

Source: Mathematical Reviews, Vol 12 No. 10

Kolmogorov, A.N.

There is a section on unimodular distributions ... that all limiting laws in Lévy's ... laws) are unimodular.

Chapters VII–IX ...

Chapter VIII ... theorem for densities of the ...

Chapter IX: Local limit theorems for the case of lattice distributions.

This book is an invaluable compendium of the most important work on the subject, and is the more striking because of the general lack of systematic and rigorous texts in probability theory. *J. L. Doob* (Urbana, Ill.).

Source: Mathematical Reviews, Vol No. 10

C.A. 2

"Geometric selection" of crystals. A. N. Kolmogorov. Doklady Akad. Nauk S.S.S.R. 65, 681-4(1949).—Implicit math. derivations concerning the problem of a selection of crystals growing on the plane boundary of a crystallizing mass; ample material of photographs furnished from expts. of G. G. Lemmlein was used. The crystals grew between 2 parallel glass plates, as in the expts. of Shubnikov and Lemmlein (ibid. 1937, 61). Graphic figures were projected in gradually increasing sizes, to represent, as 2-dimensional models, the gradually growing crystals. The initial orientation of these figures was at random, corresponding to a statistical no. distribution (Lemmlein, ibid. 46, 177(1947)). The calcn. starts from the probability function for the growth of an elongated crystal (needle) to a given length, as a function of the no. of directions of a max. rate of growth. The 3-dimensional analog is implicitly discussed. W. E.

Kolmogorov, A. N.

Kolmogorov, A. N. The solution of a problem in the theory of probability, connected with the [illegible] of the mechanism of the formation of strata. [illegible] SSSR (N.S.) 65, 793–796 (1949). (Russian)

It is assumed that strata are formed by periods of sedimentation followed by erosion. If h_n is the height of a stratum at the end of the nth period, $\delta_n = h_n - h_{n-1}$, $n = 1, 2, \cdots$, are assumed to be mutually independent random variables with a common density function $g(x)$, and a positive expectation. Let $\zeta_n^{(r)} = \delta_n + \cdots + \delta_{n+r}$. By the strong law of large numbers, $\lim_{r\to\infty} \zeta_n^{(r)} = +\infty$ and $\varphi_n = \min_r \{\zeta_n^{(r)}\}$ is therefore determinate. If $\varphi_n \leq 0$, the deposit from the nth period finally disappears, and if $\varphi_n > 0$, the residue approaches φ_n. Let $f(x)$ be the density of distribution of φ_n and let $p = \Pr\{\varphi_n > 0\} = \int_0^\infty f(x)dx$. It is shown that $f(x)$ is the unique solution of the integral equation

$$f(x) = pg(x) + \int_{-\infty}^{0} g(x-y) f(y) dy,$$

and that it can be obtained by a simple iterative procedure. The conditional [illegible]

Source: Mathematical Reviews, Vol. 10, No. 10

Kolmogorov, A.N.

Kolmogorov, A. N., and Prohorov, [illegible] On sums of a random number of random terms. [illegible] Matem. [illegible] (N.S.) 4, no. 4(32), 168–172 (1949) [illegible] Russian)

Five theorems are proved, of which [illegible] the two. Theorem [illegible] is an immediate consequence of the [illegible] 2, and theorems 3 and 5 are special cases of theorem 4. [illegible] be a chance variable which takes only nonnegative integral values, ξ_i, $i = 1, 2, \ldots$, an infinite sequence of [illegible] chance variables, and [illegible] $= \xi_1 + \cdots + \xi_\nu$. Condition w is said to be fulfilled if, for $n > m$, the chance variable ξ_n and the [illegible] $\{\nu = m\}$ are independent. Let $p_n = P\{\nu = n\}$ and $P_n =$ [illegible] $\geq n\}$. Theorem 2 states: if (a) E [illegible] $= c_i$ exist for all n, [illegible] condition w is fulfilled, (c) $\sum_{n=1}^{\infty} P_n c_n < \infty$, then $E\zeta$ exists [illegible] equals $\sum p_n A_n$, where $A_n = \sum$ [illegible] and $a_i = E\xi_i$. [illegible] $= E(|\xi_i| \mid \nu \geq$ [illegible]), $a_n = E(\xi_n \mid \nu \geq n)$. [The authors proc[illegible] [illegible]ces to prove the following somewhat more general th[illegible] if (a) c_n exists for all n, (b) $\sum_{n=1} P_n c_n^0 < \infty$, then [illegible] exists and equals $\sum_{n=1} p_n A_n^0$, where $A_n^0 = \sum_{i=1}^{n} a_i^0$. This [illegible] rem is very simi[illegible] la[illegible] to, and is proved in the same wa[illegible] theorem 7.4 of a paper by the reviewer [Ann. Math. [illegible] tics 18, 215–230 (1947); these Rev. 9, 49]. This me[illegible] of proof can be ea[illegible] extended to higher moments (s[illegible]).

[illegible] Let $\zeta_n = (\xi_n^1, \ldots)$ be a bivariate chan[illegible] [illegible]able. Condition [illegible] is said to be fulfilled if the vectors ξ [illegible] are mutually independent. Theorem 4 states: If (a) c[illegible] [illegible]ions w and z are fulfilled, (b) $E\xi_n = a_n^i$, $E(\xi_n^i - a_n^i)(\xi_n^j$ [illegible] $= b_n^{ij}$, $i, j = 1, 2$, exist for all n, ([illegible]) the series $\sum_{n=1}^{\infty} P_n\{($ [illegible] $)^2 + (b_n^{22} B_n^{11})^{\frac12}\}$ converges, where $B_n^{ij} = \sum_{k=1}^{n} b_k^{ij}$, then [illegible] $- A_\nu^1)(\zeta^2 - A_\nu^2)$ exists and equals $\sum_{n=1} p_n B_n^{12}$. Here [illegible] $\sum_{k=1}^{n} a_k^i$. [This theorem can be generalized in the s[illegible] manner as theorem 2.]

J. Wolfowitz ([illegible] York, N. Y.).

Source: Mathematical Reviews, 1950 Vol 11 No. 2

D.N.

Kolmogorov, A. N. A local limit theorem [illegible] Markov chains. Izvestiya Akad. Nauk SSS[illegible] 13, 281–300 (1949). (Russian)

The author considers a Markov chain with sta[illegible] Let $\mu^{(i)}(t)$ be the number of times the sta[illegible] in the first t transitions from the initial sta[illegible] the vector with components $\mu^{(i)}(t)$. If m [illegible] is a vector with [illegible] nonnegative integral componen[illegible] is the probability that the first $m=\sum m^{(i)}$ tran[illegible] initial state γ have passed $m^{(i)}$ times through [illegible] supposed (A) that it is possible to pass from [illegible] any other by wa[illegible] of transitions with positive [illegible] and (B) that the covariance matrix of $\mu^{(i)}$ [illegible] as $t\to\infty$, the maximum possible value. It is [illegible] $\mu(t)$ is then subject to the central limit theorem [illegible] that in a certain [illegible] 1 dimensional space $\mu(t)$ [illegible] usual, has a distribution which is asymptotic[illegible] and nondegenerate. The following local limit [illegible] also proved:

$$m^{(s-1)/2}W(m) [illegible] = [illegible] p(x)+o(1), \quad x=(m-[illegible]$$

$$E\{\mu(t)\}=qt+O(1),$$

uniformly for bounded $x^{(i)}$. Here $p(x)$ is the no[illegible] involved in the integral form of the central l[illegible] Finally it is shown how these results are to [illegible] hypotheses (A) and (B) are not satisfied. T[illegible] can be checked by a finite procedure involv[illegible] examination of the positions of the nonzero ele[illegible] transition matrix of the process. J. L. D.

Source: Mathematical Reviews, 1950, Vol 11 No. 2

KOLMOGOROV, A. N. Acad. PA 50/49T100

USSR/Physics Jun 49
Mechanics of Fluids

"The Breaking-Up of Drops in a Turbulent Stream," Acad A. N. Kolmogorov, 4 pp

"Dok Ak Nauk SSSR" Vol LXVI, No 5

Author and A. M. Obukhov present a theory of the local structure of turbulent pulsations, but believe that the idea of a hard lower facet with the dimensions of the drop and not undergoing further breaking up under assigned conditions should be further developed and experiments should be conducted on the time relation of the distribution of dimensions. Submitted 14 Apr 49.

50/49T100

KOLMOGOROV, A. N. (ACAD)

PA 156T91

USSR/Physics - Conductivity, Thermal Mar/Apr 50
Agriculture - Soil Science

"Problem of Determining the Coefficient of 'Temperature' Conductivity of Soils," Acad A. N. Kolmogorov, 2 pp

"Iz Ak Nauk SSSR, Ser Geograf i Geofiz" Vol XIV, No 2

Proposes method of calculating "temperature" conductivity of soil from temperatures at two depths at four moments of time. This improved method eliminates several defects in method proposed by M. A. Kaganov and A. F. Chudnovskiy. Submitted 14 Dec 49.

[redacted] 156T91

1. SEVAST'YANOVA, B. A.; KOLMOGOROV, A. N.

2. USSR (600)

4. Science

7. Introduction to theory of probabilities and mathematics statistics. Per. a angl A. S. Monina i A. A. Petrova. Pod Red. B. A. Sevast'yanova. Arley, N.; Bukh, K. R. (Authors) Predial. A. N. Kolmogorova. Moskva. Izd. Inostr. Lit. 1951.

9. Monthly List of Russian Accessions, Library of Congress, January, 1953. Unclassified.

KOLMOGOROV, A.N.

Gnyegyenko, B.V., és Kolmogorov, A.N. Független valószínűségi változók összegeinek határeloszlásai. [Limit distributions for sums of independent random variables.] Akadémiai Kiadó, Budapest, 1951. 256 pp. 32.00 florints.

Translation of Gnedenko and Kolmogorov, Predel'nye raspredeleniya dlya summ nezavisimyh slučainyh veličin [Gostehizdat, Moscow-Leningrad, 1949; these Rev. 12, 839]. The translation is by I. Földes.

SO: Mathematical Review, Vol. 14, No. 3, March 1953, pp. 233-340.

KOLMOGOROV, A.N.

Kolmogorov, A. N. On the exposition of the foundations of Lebesgue's theory of measure. Uspehi Matem. Nauk (N.S.) 5, no. 1(35), 211-213 (1950). (Russian)

The author sketches a method whereby the original definition of measure given by Lebesgue can be applied to countably additive measures on certain abstract sets. Let U be any set, and let $\mathfrak{E}$ be a family of subsets Δ of U, designated as elementary sets. Let $m(\Delta)$ be a nonnegative set-function defined for all $\Delta \epsilon \mathfrak{E}$. Let A be any subset of U. If there exists a countable subfamily $\{\Delta_n\}$ of $\mathfrak{E}$ such that $A \subset \bigcup \Delta_n$, let the set-function $\lambda(A)$ be defined as $\inf \sum m(\Delta_n)$, the infimum being taken over all countable families $\{\Delta_n\} \subset \mathfrak{E}$ such that $A \subset \bigcup \Delta_n$. If no such family $\{\Delta_n\}$ exists, let $\lambda(A) = +\infty$. A subset B of U is said to be Lebesgue measurable if, for all $\Delta \epsilon \mathfrak{E}$, the equality $\lambda(\Delta) = \lambda(\Delta \cap B) + \lambda(\Delta \cap B')$ obtains. The author states that λ is a Carathéodory outer measure, and that measurability in the sense of Lebesgue is equivalent to the usual measurability in the sense of Carathéodory. [Proofs of these assertions are easily supplied.] Let λ, when defined only on the family $\mathfrak{S}_\mu$ of Lebesgue measurable sets, be denoted by the symbol μ. It is next stated that a set-function μ defined on a family $\mathfrak{S}_\mu$ of subsets of U (such that $0 \leqq \mu(A) \leqq +\infty$) can be obtained by the construction described above if and only if the following conditions are satisfied: (1) the family of sets $\mathfrak{S}_\mu$ contains a largest set and is closed under the formation of countable unions and intersections; (2) μ is countably additive; (3) if $A \epsilon \mathfrak{S}_\mu$, $\mu(A) = 0$, and $B \subset A$, then $B \epsilon \mathfrak{S}_\mu$. Finally, the author states that, under the above construction, all elementary sets are measurable and $m(\Delta) = \mu(\Delta)$ for all elementary sets if and only if the following conditions are satisfied: (4) if $\{\Delta_n\}$ is a countable subfamily of $\mathfrak{E}$ such that $\Delta \subset \bigcup \Delta_n$, then $m(\Delta) \leqq \sum m(\Delta_n)$; (5) given Δ and $\Delta^* \epsilon \mathfrak{E}$ and $\epsilon > 0$, there exist countable subfamilies $\{\bar{\Delta}_i\}$ and $\{\bar{\bar{\Delta}}_j\}$ of $\mathfrak{E}$ such that $\Delta \cap \Delta^* \subset \bigcup \bar{\Delta}_i$, $\Delta \cap \Delta^{*\prime} \subset \bigcup \bar{\bar{\Delta}}_j$, and

$$\sum m(\bar{\Delta}_i) + \sum m(\bar{\bar{\Delta}}_j) \leqq m(\Delta) + \epsilon.$$

[Reviewer's note. The construction given has the odd feature that, in some simple cases, there are no Lebesgue measurable sets. For example let U be any infinite set, and let $\{x_1, x_2, \cdots, x_n, \cdots\}$ be a countably infinite subset of U. Let $\mathfrak{E}$ be the family of all sets consisting of a single x_n. Let $m(x_n) = \alpha_n$, where $t = \inf_{1 \leq n < \infty} \alpha_n > 0$. Then $\lambda(0) = t$, and no subset A of U is Lebesgue measurable. On the other hand, if $t = 0$, then $\lambda(0) = 0$ and all subsets of U are Lebesgue measurable.] E. Hewitt (Seattle, Wash.)

Source: Mathematical Reviews, 1950 Vol 11 No. 8

CRCV, A.N.

Nauk SSSR. Ser. Mat. 14, 303-326 (1950). (Russian)

The purpose of this expository article is to stimulate

and specifically on the theories of ... and ... estimation. Writing, apparently, for a reader with more training in practical statistics than in pure mathematics

tics, and obtains some of their elementary properties. He discusses in great (and even numerical) detail ... examples involving binomial and normal distributions (the former in the language of the theory of quality control). Although, according to the author, the paper presumes to do no more than to demonstrate by examples that ...

generalized form, and these generalizations are later applied to simplify the proofs of some of the reviewer's results on symmetric unbiased estimates [Ann. Math. Statistics 17, 34-43 (1946); these Rev. 7, 463].

P. R. Halmos.

Source: Mathematical Reviews, Vol 12, No. 2

KOLMOGOROV, A. N.

Kolmogorov, A. N. Generalization of Poisson's formula to the case of a sample from a finite set. Uspehi Matem. Nauk (N.S.) 5, no. 3(43), 133–134 (1951). (Russian)

[illegible]

[illegible] distribution defined by the probabilities

[illegible] $m!(1-\lambda)^m$ [illegible] $e^{-\omega}$,

where $\omega = -\lambda^{-1} \log (1-\lambda)$, $\lambda = n/N$.

M. Loève.

Source: Mathematical Reviews, Vol 12 No. 3

KOLMOGOROV, A.N.

USSR/Mathematics - Mathematician May/Jun 51

"Ivan Georgiyevich Petrovskiy, on the Occasion of His 50th Birthday," A. N. Kolmogorov

"Uspekh Matemat Nauk" Vol VI, No 3 (43), pp 160-164

Member of the mathematical school founded by D. F. Yegorov in Moscow. Elected in 1946 as an active member of Acad Sci USSR, where he was at first deputy director of the Math Inst and later academician-secretary of the Physicomath Dept. In May 1951 nominated rector of Moscow U, where he had been a student, candidate, and finally professor. Edits the most important Soviet mathematical periodical "Matemat Sbornik," and also "Trudy Matemat

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188T62

USSR/Mathematics - Mathematician (Contd) May/Jun 51

Inst, Ak Nauk SSSR." Awarded 3 orders of Workers' Red Banner. Lists 36 works.

188T62

KOLMOGOROV, A.N. 188T64

USSR/Mathematics - Probability May/Jun 51

"Review of G. P. Boyev's Book "Theory of Probability," A. N. Kolmogorov

"Uspekh Matemat Nauk" Vol VI, No 3 (43), pp 175-181

Subject book published 1950 by State Tech Press for 9.45 rubles; 15,000 copies. Authorized by the Ministry of Higher Educ of USSR as textbook for higher institutions of learning. Review is favorable. Reviewer states that scientific literature on the theory of probability in the USSR is not very abundant.

188T64

KOLMOGOROV, A. N.

191T82

USSR/Mathematics - Functionals Jul/Aug 51

"Works of I. M. Gel'fand on the Algebraic Problems of Functional Analysis," A. N. Kolmogorov

"Uspekh Matemat Nauk" Vol VI, No 4 (44), pp 184-186

Subject works won a Stalin prize. Gel'fand succeeded in touching a basic and most fruitful line of work on reconstructing all of functional analysis in the algebraic direction. Modern mathematics uses extensively the general geometric and algebraic methods by considering, on the one hand, the most diverse systems of objects (functions, lines, etc.) as a certain geometric entity -- namely, space -- and, on

191T82

USSR/Mathematics - Functionals (Contd) Jul/Aug 51

the other hand, diverse systems of objects with the operations on them as algebraic forms -- namely, groups, rings, or flds. These represent 2 directions to follow in mathematics.

191T82

KOLMOGOROV, A. N.

191T84

USSR/Mathematics - Statistics, Mathematical Jul/~~Aug~~ 51

"The Works of N. V. Smirnov on the Study of the Properties of Variational Series and on the Non-parametric Problems of Mathematical Statistics," A. N. Kolmogorov, A. Y. Khinchin

"Uspekh Matemat Nauk" Vol VI, No 4 (44), pp 190-192

Until recently in math statistics one was limited almost exclusively to problems of detg the parameters. For example, earlier it was assumed that the distribution function F(x) possesses the usual gaussian form and the usual parameters a

191T84

USSR/Mathematics - Statistics, Mathematical (Contd) Jul/Aug 51

(shift) and sigma (spread) are evaluated from the observed quantities $x_1, x_2, .., x_n$. Often such an approach is artificial in problems. However, Smirnov considered all possible types of distribution functions and terms.

191T84

theory connected with the ... Translation no. 53.
stratification
8 pp. (1951)

Source: Mathematical Reviews, Vol 13 No.3

KOLMOGOROV, A.N.

Kolmogorov, A. N. On the differentiability of the transition probabilities in stationary Markov processes with a denumberable number of states. Moskov. Gos. Univ. Učenye Zapiski 148, Matematika 4, 53–59 (1951). (Russian)

The author considers Markov chains with infinitely many states and stationary transition probabilities. Let $[p_{ij}(t)]$ be the matrix of transition probabilities for time t. It is assumed that $\lim_{t\to 0} p_{ii}(t)=1$. The reviewer has shown [Trans. Amer. Math. Soc. 52, 37–64 (1942); these Rev. 4, 17] that then $p_{ij}'(0)=a_{ij}$ exists for $j\neq i$, and for $j=i$ if $a_{ii}>-\infty$. The author gives new proofs of these facts, proving also that a_{ij} exists and is finite in all cases. He gives simple examples of pathological cases in which, for a single value of i, $a_{ii}=-\infty$, and in which every a_{ij} is finite but, for a single value of i, $\sum_j a_{ij}\neq 0$. In the latter example, the backward differential equations for the transition probabilities are no longer valid. See also the pathological examples given by Lévy [Ann. Sci. Ecole Norm. Sup. (3) 68, 327–381 (1951); these Rev. 13, 959]. *J. L. Doob.*

SO: MATHEMATICAL REVIEW (unclassified)
Vol. XIV, No 3, pp233-240 March 1953

KOLMOGOROV, A. N.

Mathematical Reviews
Vol. 15 No. 4
Apr. 1954
Analysis

*Alekszandrov, P. Sz., és Kolmogorov, A. N. Bevezetés a halmazelméletbe és a függvénytanba. Első rész. [Introduction to the theory of sets and the theory of functions. Part one.] = Alekszandrov, P. Sz. Bevezetés a halmazok és függvények általános elméletébe. [Introduction to the general theory of sets and functions.] Akadémiai Kiadó, Budapest, 1952. 276 pp. 45 Ft.

Translation by Gy. Bizám of Aleksandrov's Vvedenie v obščuyu teoriyu množestv i funkcii [Gostehizdat, Moscow-Leningrad, 1948; these Rev. 12, 682].

8-24-54
LL

DELONE, B. N.; KUROSH, A. G.; KOLMOGOROV, A. N.; MARKOV, A. A.; GELFOND, A. O.; MEYMAN, N. N.; VILENKIN, N. Ya.

Algebra

Development of algebra. Usp.nat.nauk 7 No. 3, 1952.

9. Monthly List of Russian Accessions, Library of Congress, November 1952, Uncl.

KOLMOGOROV, A. N. PA 242T78

USSR/Mathematics - Prize Winners Sep/Oct 52

"Mathematical Life in the USSR: Works Winning a Stalin Prize," A. N. Kolmogorov

"Usp Matemat Nauk" Vol 7, No 5(51), pp 234-7

Dr of Phys-Math Sci S. N. Mergelyan awarded prize in 1951 for works on constructive theory of functions, main results of which were expounded in his article "Uniform Approximations of Functions of a Complex Variable" (ibid., 7, No 2 (1952)). S. M. Nikol'skiy's prize-winning works during 1949-1951 represent the culmination of 10 years' work in his single program of approximations of functions following the investigations of S. N. Bernshteyn.

242T78

KOLMOGOROV, A.N.

USSR/Physics - Hydrodynamics 1 May 52

"Problem Concerning Resistance and Velocity Profile During Turbulent Flow in Pipes," Acad A. N. Kolmogc v

"Dok Ak Nauk SSSR" Vol LXXXIV, No 1, pp 29, 30

Discusses subject formulas of P. K. Konakov, A. D. Al'tshul', and Nikuradze. States that G. A. Gurzhiyenko's assertion concerning the small influence of a wall on indications of micro-setting is fully founded by expts. Submitted 19 Mar 52.

224T93

KOLMOGOROV, A. N.

Mathematical Reviews
May 1954
Analysis

(2) Kolmogoroff, A. A. Stationary sequences in Hilbert spaces. Trabajos Estadistica 4, 55–73, 243–270 (1953). (Spanish)

Translated from Byull. Moskov. Gos. Univ. Matematika 2 (1941); these Rev. 5, 101.

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10-7-54
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FIDMAN, B.A.; KOLMOGOROV, A.N., akademik.

Velocity of a water current at a sudden increase of depth. Izv.AN SSSR Otd.tekh.nauk no.4:512-522 Ap '53.
(MLRA 6:8)
(Hydrodynamics)

KOLMOGOROV, A.N.

USSR/Mathematics - Probability Oct 53

"Certain Works of Recent Years in the Field of Limit Theorems of Probability Theory," A.N. Kolmogorov

Vest Mos Univ, Ser Fizikomat i Yest Nauk, No 7, pp 19-38

Mentions his and B.V. Gnedenko's Predel'nyye Raspredeleniya dlya Summ Nezavisimykh Sluchaynykh Velichin (Limit Distributions for Sums of Independent Chance Quantities), 1949. Refers to related works of: R.L. Dobrushin (Izv An SSSR, 17, 1953); Yu. V. Prokhorov (Usp Mat Nauk, 8,

273T91

No 3, 1953; DAN SSSR, 83, 1952); D.G. Meyzler, O.S. Parasyuk, and Ye. L. Rvacheva (Dan SSSR, 60, 1948; Ukr Mat Zhur, 9-20, 1949); Ye.L. Rvacheva (Trudy Inst Mat i Mekh An Uzbek SSR, No 10, part 1, 1953); Yu. V. Linnik and N.A. Sapogov (Izv AN SSSR, 13, 1949); S. Kh. Sirazhdinov (Dan SSSR, 84, 1952).

KOLMOGOROV, A. N. Acad.

"Certain Questions of the Qualitative Theory of Dynamic Systems with an Integral Invariant," report giben at the All-University Scientific Conference "Lomonosov Lectures", Vest. Mosk. Un., No.8, 1953

Translation U-7895, 1 Mar 56

KOLMOGOROV, A.N.

Some work of recent years on boundary theorems in the theory of probabilities. Vest.Mosk.un. 8 no.10:29-38 O '53. (MLRA 7:1)
(Chains (Mathematics))

GEL'FAND, I.M.; GRAEV, M.I.; KOLMOGOROV, A.N., akademik.

Unitary representations of a real unimodular group (principal non-degenerate series). Izv.AN SSSR 17 no.3:189-248 My-Je '53. (MLRA 6:5)

1. Akademiya Nauk SSSR (for Kolmogorov).

DOBRUSHIN, R.L.; KOLMOGOROV, A.N., akademik.

Boundary theorems for a Markoff chain of two forms. Izv.AN SSSR Ser.mat. 17 no.4:291-330 Jl-Ag '53. (MLRA 6:7)
(Probabilities)

PUGACHEV, V.S.; KOLMOGOROV, A.N., akademik.

General correlation theory of random functions. Izv.AN SSSR Ser.mat. 17 no.5: 401-420 S-O '53. (MLRA 6:10)

1. Akademiya nauk SSSR (for Kolmogorov). (Correlation (Statistics))

KOLMOGOROV, A. N.

USSR/Mathematics - Markov Chains 1 May 53

"Ergodic Principle for Nonhomogeneous Markov Chains," T.A. Sarymsakov, Active Member, Acad Sci Uzbek SSR, Central Asiatic State U

DAN SSSR, Vol 90, No 1, pp 25-28

Considers a simple nonhomogeneous and discrete Markov chain with uniquely possible and disjoint states $w_1, w_2, \ldots, w_s$, which is completely detd by the assignment of a sequence of stochastic matrices (V.I. Romanovskiy, Acta Math. 66, 174 (1935); A.N. Kolmogorov, Usp Mat Nauk, No 5 (1938); S.N. Bernshteyn, Teoriya Veroyatnostey, Theory of Probabilities, 4th ed, 1948). $A_k = //p_{ij}(k)//$ ($k=1,2,\ldots$; $i,j=1,2,\ldots,s$), where $p_{ij}(k)$ is the conditional probability that state w_i remaining at moment t_k will pass over to state w_j at moment t_{k+1} (i.e., in one step). Presented 22 Dec 52.

259T70

ARESHKIN, G.Ya.; KOLMOGOROV, A.N., akademik.

Congruence relations in distributive structures with zero elements. Dokl. AN SSSR 90 no.4:485-486 Je '53. (MLRA 6:5)

1. Akademiya Nauk SSSR (for Kolmogorov). (Congruences (Geometry))

MIKELADZE, Sh,Ye.; KOLMOGOROV, A.N., akademik.

Theory of the constructionof interpolation formulas. Dokl.AN SSSR 90 no. 4:503-506 Je '53. (MLRA 6:5)

1. Akademiya Nauk SSSR (for Kolmogorov). 2. Tbilisskiy matematicheskiy institut Akademii nauk Gruzinskoy SSR (for Mikeladze). (Interpolation)

BARI, N.K.; KOLMOGOROV, A.N., akademik.

Generalization of inequalities of S.N. Bernshtein and A.A. Markov. Dokl. AN SSSR 90 no.5:701-702 Je '53. (MLRA 6:5)

1. Akademiya Nauk SSSR (for Kolmogorov). (Inequalities (Mathematics))

YAGLOM, A.M.; PINSKER, M.S.; KOLMOGOROV, A.N., akademik.

Random processes with fixed increments of the n-th order. Dokl.AN SSSR 90 no.5:731-734 Je '53. (MLRA 6:5)

1. Akademiya Nauk SSSR (for Kolmogorov). (Probabilities)

KHAPLANOV, M.G.; KOLMOGOROV, A.N., akademik.

Spectral theory of matrixes in an analytical space. Dokl. AN SSSR 90 no.6:969-972 Je '53. (MLRA 6:6)

1. Rostovskiy gosudarstvennyy universitet im. V.M.Molotova (for Khaplanov).
2. Akademiya nauk SSSR (for Kolmogorov).
(Matrixes) (Spaces, Generalized)

KRASNOSEL'SKIY, M.A.; POLOVITSKIY, A.I.; KOLMOGOROV, A.N., akademik.

Variational methods in the problem for points of bifurcation. Dokl. AN SSSR 91 no.1:19-22 Jl '53. (MLRA 6:6)

1. Akademiya nauk SSSR (for Kolmogorov).
(Spaces, Generalized) (Calculus of variations)

SOBOLEV, V.I.; KOLMOGOROV, A.N., akademik.

Semiordered measures of sets, measurable functions, and certain abstract integrals. Dokl. AN SSSR 91 no.1:23-26 Jl '53. (MLRA 6:6)

1. Voronezhskiy gosudarstvennyy universitet. 2. Akademiya nauk SSSR (for Kolmogorov). (Integrals) (Aggregates)

DYNKIN, Ye.B.; KOLMOGOROV, A.N., akademik.

Construction of primitive cycles in compact Lie groups. Dokl.AN SSSR 91 no.2:201-204 Jl '53. (MLRA 6:6)

1. Akademiya nauk SSSR (for Kolmogorov). (Topology) (Groups, Theory of)

KOLMOGOROV, A.N., akademik; MOKRISHCHEV, K.K.

Solvability of construction problems of the second order in the Lobachevski plane, with the aid of a hypercompass or compass and oricompass. Dokl.AN SSSR 91 no.3:453-456 Jl '53. (MLRA 6:7)

1. Rostovskiy gosudarstvennyy universitet imeni V.M.Molotova (for Mokrishchev). 2. Akademiya nauk SSSR (for Kolmogorov). (Geometry, Plane)

USPENSKIY, V.A.; KOLMOGOROV, A.N., akademik.

Gödel's theorem and the theory of algorisms. Dokl.AN SSSR 91 no.4: 737-740 Ag '53. (MLRA 6:8)

1. Akademiya nauk SSSR (for Kolmogorov).
(Aggregates) (Algorism)

VINOGRAD, R.E.; KOLMOGOROV, A.N., akademik.

Instability of characteristic indexes of proper systems. Dokl.An SSSR 91 no.5:999-1002 Ag '53. (MLRA 6:8)

1. Akademiya nauk SSSR (for Kolmogorov). (Matrixes)

DYNKIN, E.B.; KOLMOGOROV, A.N., akademik.

Homological characteristics of homomorphisms in compact Lie groups. Dokl. AN SSSR 91 no.5:1007-1009 Ag '53. (MLRA 6:8)

1. Akademiya nauk SSSR (for Kolmogorov). (Groups, Continuous)

RODNYANSKIY, A.M.; KOLMOGOROV, A.M., akademik.

Integral representations of the degree of mapping. Dokl.AN SSSR 91 no.5: 1019-1021 Ag '53. (MLRA 6:8)

1. Akademiya nauk SSSR (for Kolmogorov). 2. Moskovskiy khimiko-tekhnologicheskiy institut myasnoy promyshlennosti. (Surfaces, Representation of)

KHARAZOV, F.F.; KOLMOGOROV, A.N., akademik.

One class of linear equations with symmetrizable operators. Dokl.AN SSSR 91 no.5:1023-1026 Ag '53. (MLRA 6:8)

1. Akademiya nauk SSSR (for Kolmogorov). 2. Tbilisskiy matematicheskiy institut im. A.Razmadze Akademii nauk Gruz.SSR.

(Differential equations)

AL'BER, S.I.; KOLMOGOROV, A.N., akademik.

Homologe of a space of surfaces and their applicatio. to variational calculus. Dokl.AN SSSR 91 no.6:1237-1240 Ag '53. (MLRA 6:8)

1. Akademiya nauk SSSR (for Kolmogorov). 2. Tomskiy gosudarstvennyy universitet im. V.V.Kuybysheva. (Topology) (Calculus of variations)

BEREZANSKIY, Yu.M.; KOLMOGOROV, A.N., akademik.

Hypercomplex systems constructed on Sturm-Liouville equation on the semiaxis. Dokl.AN SSSR 91 no.6:1245-1248 Ag '53. (MLRA 6:8)

1. Akademiya nauk SSSR (for Kolmogorov). 2. Institut matematiki Akademii nauk Ukrainskoy SSR. (Topology) (Differential equations)

BERMAN, D.L.; KOLMOGOROV, A.N., akademik.

Approximation of periodic functions by linear, trigonometric polynomial operations. Dokl.AN SSSR 91 no.6:1249-1252 Ag '53. (MLRA 6:8)

1. Akademiya nauk SSSR (for Kolmogorov). (Functions, Periodic) (Polynomials)

GANZBURG, I.M.; KOLMOGOROV, A.N., akademik.

Approximation of functions with a given module of continuity, by P.L.Chebyshev's sums. Dokl.AN SSSR 91 no.6:1253-1256 Ag '53. (MLRA 6:8)

1. Akademiya nauk SSSR (for Kolmogorov). 2. Dnepropetrovskiy gosudarstvennyy universitet. (Functions)

SMIRNOV, Yu.; KOLMOGOROV, A.N., akademik.

Completeness of uniform spaces and spaces of proximity. Dokl. AN SSSR 91 no.6:1281-1284 Ag '53. (MLRA 6:8)

1. Akademiya nauk SSSR (for Kolmogorov). (Topology) (Spaces, Generalized)

KHARAZOV, D.F.; KOLMOGOROV, A.N., akademik.

Theory of symmetrizable operators, depending polynomially on the parameter. Dokl.AN SSSR 91 no.6:1285-1287 Ag '53. (MLRA 6:8)

1. Akademiya nauk SSSR (for Kolmogorov). 2. Tbilisskiy matematicheskiy institut im. A.Razmadze Akademii nauk Gruzinskoy SSR.

(Functional analysis)

SHILOV, G.Ye.; KOLMOGOROV, A.N., akademik.

Criterion of compactness in a uniform space of functions. Dokl.AN SSSR 92 no.1:11-12 S '53. (MLRA 6:8)

1. Akademiya nauk SSSR (for Kolmogorov). (Spaces, Generalized)

KHAVINSON, S.Ya.; KOLMOGOROV, A.N., akademik.

Certain non-linear extremal problems for bounded analytic functions. Dokl.AN SSSR 92 no.2:243-245 S '53. (MLRA 6:9)

1. Akademiya nauk SSSR (for Kolmogorov). 2. Yeletskiy gosudarstvennyy uchitel'skiy institut (for Khavinson). (Functions, Analytic)

FRANKL', F.I.; KOLMOGOROV, A.N., akademik.

Theory of movement in suspended depositions. Dokl.AN SSSR 92 no.2:247-250 S '53. (MLRA 6:9)

1. Akademiya nauk SSSR (for Kolmogorov). 2. Kirgizskiy gosudarstvennyy universitet (for Frankl'). (Fluid mechanics) (Sedimentation and deposition)

MIKELADZE, Sh.Ye.; KOLMOGOROV, A.N., akademik.

Expansion of finite differences from functions in differences of its derivative. Dokl.AN SSSR 92 no.3:479-482 S '53. (MLRA 6:9)

1. Akademiya nauk SSSR (for Kolmogorov). 2. Matematicheskiy institut Akademii nauk Gruzinskoy SSR (for Mikeladze). (Difference equations)

ORLOV, S.A.; KOLMOGOROV, A.N., akademik.

Defect index for linear differential operators. Dokl.AN SSSR 92 no.3:483-486 S '53. (MLRA 6:9)

1. Akademiya nauk SSSR (for Kolmogorov).
(Operators (Mathematics)) (Differential equations, Linear)

FADDEYEV, D.K.; KOLMOGOROV, A.N., akademik.

One theory of the theory of homologies in groups. Dokl.AN SSSR 92 no.4:703-705 O '53. (MLRA 6:9)

1. Akademiya nauk SSSR (for Kolmogorov). 2. Leningradskiy gosudarstvennyy universitet im. A.A.Zhdanova (for Kolmogorov). (Groups, Theory of)

BEREZANSKIY, Yu.M.; KOLMOGOROV, A.N., akademik.

Proper function analysis of partial difference equations. Dokl.AN SSSR 93 no.1:5-8 N '53. (MLRA 6:10)

1. Akademiya nauk SSSR (for Kolmogorov). 2. Institut matematiki Akademii nauk Ukrainskoy SSR (for Berezanskiy). (Difference equations)

MONIN, A.S.; OBUKHOV, A.M.; KOLMOGOROV, A.N., akademik.

Dimensionless characteristics of turbulence in the surface layer of the atmosphere. Dokl.AN SSSR 93 no.2:257-260 N '53. (MLRA 6:10)

1. Akademiya nauk SSSR (for Kolmogorov). 2. Geofizicheskiy institut Akademii nauk SSSR (for Monin and Obukhov). (Atmosphere)

BEREZANSKIY, Yu.M.; KOLMOGOROV, A.N., akademik.

Unique determination of the Schrödinger equation by its spectral function.
Dokl.AN SSSR 93 no.4:591-594 D '53. (MLRA 6:11)

1. Akademiya nauk SSSR (for Kolmogorov). 2. Institut matematiki Akademii nauk Ukrainskoy SSR (for Berezanskiy).
(Geometry, Differential--Projective)

KOLMOGOROV, A. N.

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USSR

Kolmogorov, A. N. On dynamical systems with an integral invariant on the torus. Doklady Akad. Nauk SSSR (N.S.) 93, 763–766 (1953). (Russian)

The author considers a dynamical system defined on a 2-dimensional torus T^2 by the system of differential equations

$$(1)\qquad \frac{dx}{dt}=A(x,y),\quad \frac{dy}{dt}=B(x,y),$$

and possessing an invariant integral $I(g)=\int\int_g U(x,y)dxdy$, where A, B and U are univalued, analytic periodic functions of x and y with period 2π. Here x and y are real coordinates mod 2π, $A^2+B^2>0$, $U>0$ on the whole of T^2. It is then known [Nemyckii and Stepanov, Qualitative theory of differential equations, 2nd. ed., Gostehizdat, Moscow-Leningrad, 1949; for a review of the 1st ed. see these Rev. 10, 612] that there exists an analytic transformation of coordinates which transforms the system (1) into the system

$$(2)\qquad \frac{dx}{dt}=\frac{1}{F(x,y)},\quad \frac{dy}{dt}=\frac{\gamma}{F(x,y)}$$

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with an integral invariant $I(g)=\iint_g F(x,y)dxdy$ where γ is a constant.

The following theorem is asserted. Theorem 1. If there exist constants $c>0$ and $h>0$ such that for all positive integers m and n

$$\text{(i)} \qquad |m-n\gamma| \geq cn^{-h},$$

then there exists an analytic transformation of coordinates which transforms the system (2) into the system

$$\text{(3)} \qquad \frac{du}{dt}=\lambda_1, \quad \frac{dv}{dt}=\lambda_2,$$

where λ_1, λ_2 are constants and $\lambda_2=\gamma\lambda_1$ and with the integral invariant $I(g)=K\iint_g dudv$. Condition (i) is fulfilled for every γ except for a set of Lebesgue measure zero (c and h depend on γ). It follows that system (1) has a pure point spectrum with analytic proper functions.

For those irrational numbers which do satisfy (i) the author states: Theorem 2. Each of the following conditions is possible for a suitable choice of γ and $F(x,y)$: The system (2) can be transformed into (3) by (I) an infinitely differentiable but not analytic transformation, (II) a k-differenti-

3/3 KOLMOGOROV, A.N.

able but not ($k+1$)-differentiable transformation, (III) an everywhere-discontinuous transformation; and (IV) the system (2) cannot be transformed into (3) at all. In (I), (II) and (III) the original system (1) has a pure point spectrum but the proper functions are respectively not analytic, not $k+1$ differentiable and everywhere discontinuous. The conjecture is made that in (IV) the spectrum is necessarily continuous but only a considerably weaker result is proved. In all statements related to Theorem 2 the notions of analyticity, differentiability, etc. are interpreted modulo sets of Lebesgue measure zero. The method of obtaining the system (3) from (2) is obtained and discussed.

Y. N. Dowker (London).

KREYN, M.G.; KOLMOGOROV, A.N., akademik.

Certain cases of effective determination of the density of a heterogenous string by its spectral function. Dokl.AN SSSR 93 no.4:617-620 D '53.
(MLRA 6:11)

1. Akademiya nauk SSSR (for Kolmogorov).
(Vibration) (Mathematical physics)

KOLMOGOROV, A.N., akademik; SOROKIN, I.S., redaktor; GUBER, A., tekhnicheskiy redaktor.

[The profession of a mathematician] O professii matematika. Izd. 2-e, dop. Moskva, Gos. izd-vo "Sovetskaia nauka," 1954. 29 p. (Mathematics as a profession) (MIRA 7:11)

KOLMOGOROV, A.N.

TREASURE ISLAND BOOK REVIEW

KOLMOGOROV, A. N., FOMIN, S. V. AID 777 - M

ELEMENTY TEORII FUNKTSIY I FUNKTSIONALNOGO ANALIZA. Vypusk I METRICHESKIYE I NORMIROVANNYYE PROSTRANSTVA (Elements of the theory of functions and functional analysis. Issue I: Metrical and normed spaces). Izdatel'stvo Moskovskogo Universiteta, 1954. 153 p.

This textbook was written by A. N. Kolmogoroff, one of the outstanding Russian Scientist mathematicians, assisted by Professor S. V. Fomin, for students of graduate schools in the mathematical faculty of Russian universities.

The first chapter of this text is devoted to a brief exposition of some basic ideas of the theory of sets in which modern functional analysis is needed. A more extensive text on this subject of the introduction to the general theory of sets and functions has been written by another outstanding Russian mathematician, P. S. Alexandroff. This text is recommended by Kolmogoroff as an additional text to his first chapter (p. 5). For more extensive study of the whole field of the theory of sets, the fundamental book on this subject, the Grundzüge der Mengenlehre, written by F. Hausdorff,

was translated from the German into Russian in 1936. [The first German edition of this book was reprinted in the U.S.A. in 1949].

The second, third and fourth Chapters on metrical spaces, linear normed spaces, and linear operational equations respectively, are written on the basis of the modern theory of functional analysis, in whose creation Kolmogoroff took part by writing many articles. The most famous of his articles include:

I. Über die analytischen Methoden der Wahrscheinlichkeitsrechnung. Math. Annalen, 104 (1931) 415-458.

II. Sulla forma generale di un processo stocustico omogneo. (Un problema di Bruno de Finetti). Atti Accad. naz. Lincei, Rend., (6) 15 (1932) 805-808, 866-869.

III. Zur Normierbarkeit eines algemeinen topologischen linearen Raumes. Studia Math., 5 (1934) 29-33.

A very important supplement called "Generalized functions" was added to the third chapter - Linear normed spaces - .

KOLMOGOROV, A. N., FOMIN, S. V., Elementy teorii . . . AID 777 - M

In this supplement the method of determining of generalized functions, constructed by the Russian scientist S. L. Sobolev was used. This method was published in several articles in Russia in 1935-1936 (p. 129).

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KOLMOGOROV A.M.

LYAPUNOV, A.M.; SRETENSKIY, L.N., otvetstvennyy redaktor; KOLMOGOROV, A.M., akademik; SMIRNOV, V.I., akademik; SUBBOTIN, M.F.; ISHLINSKIY, A.Yu.; MIGIRENKO, G.S., kandidat fizicheskikh-matematicheskikh nauk; PETER-VICH, V.V., kandidat fizicheskikh-matematicheskikh nauk; GERMOGENOV, A.V., redaktor; ALEKSEYEVA, T.V., tekhnicheskiy redaktor.

[Collected works] Sobranie sochinenii. Moskva, Izd-vo Akademii nauk SSSR. Vol. 1. 1954. 446 p. (MLRA 7:11)

1. Chlen-korrespondent Akademii nauk SSSR (for Sretenskiy and Subbotin) 2. Deystvitel'nyy chlen Akademii nauk SSSR (for Izhlinskiy) (Liapunov, Aleksandr Mikhailovich, 1857-1918) (Mathematics)

KOLMOGOROV, A. [N.]

Kolmogoroff, Andrej: und Prochorow ... Funktionen und Grenzverteilungssätze. Bericht über die Tagung Wahrscheinlichkeitsr...

An amalgam of two expository lectures. Of particular interest is the treatment of ... which goes from the most abstract definition to applications to specific probability ...

... translation [Akadémiai Kiadó, Budapest, 1951; these Rev. 14, 294] are incorporated. Appendix I by J. L. Doob contains further remarks on some of the topics of Ch. I. The translator has also corrected minor misprints and annotated the text. He wishes to call attention to the following error: The footnote on p. 16 should read ... points in A but not in B.

KOLMOGOROV, A.N.

USSR/Physics - Suspension Pumps FD-767

Card 1/2 : Pub 129-4/24

Author : Kolmogorov, A. N.

Title : M. A. Velikanov's new variant of his gravitational theory of motion of suspension pumps

Periodical : Vest. Mosk. un., Ser. Fizikomat, i yest. nauk, Vol 9, No 2, 41-45 Mar 1954

Abstract : The author claims that the new variant (M. A. Velikanov, "Motion of suspension pumps," Vest. Mosk. un., No. 8, 1953) of Velikanov's" gravitational theory" of the transfer of suspended particles by a turbulent current, first proposed by Velikanov in 1944, leads to conclusions so paradoxical and so roughly inconsistent with daily experience that the theory's defective basis has become particularly evident. Velikanov's fundamental idea of the role of the "energy of suspension", which is essentially correct, is here analyzed for any errors and also for the possibility of its more correct development. The author refers to a related work of G. I. Barenblatt (Motion of suspended particles in a turbulent current," Prikl. mat. i mekh., 17, No. 3, 261-272, 1953).

(no institution)

Submitted: December 16, 1953

KOLMOGOROV, A.N.

USSR/Mathematics - Mechanics

Card 1/1 : Pub. 22 - 4/49

Authors : Kolmogorov, A. N., Academician

Title : On conservation of conditionally periodic movements at a small change of Hamilton's function

Periodical : Dok. AN SSSR 98/4, 527-530, Oct. 1, 1954

Abstract : A theorem, quite important for mechanics, is proved. The theorem states that a s-parametric system of conditionally periodic movements, such as $q_\alpha = \lambda_\alpha t + q_\alpha^{(0)}$; $p_\alpha = 0$, under certain conditions outlined in the theorem, can not vanish as a result of small changes of Hamilton's function governing the movements. Three references (1936-1953).

Institution : ...

Submitted : ...

KOLMOGOROV, A.N., akad.; NEMYTSKIY, V.V., prof., otv.red.

[Program in the theory of probability; for the Mechanics-Mathematics Faculty. Major: mathematics] Programma po teorii veroiatnosti dlia mekhaniko-matematicheskogo fakul'teta. Spetsial'nost' - matematika. 1956. 1 p. (MIRA 11:3)

1. Moscow. Universitet.
(Probabilities)

ALEKSANDROV, A.D., redaktor; KOLMOGOROV, A.N., akademik, redaktor; LAVRENT'YEV, M.A., akademik, redaktor; RYVKIN, A.Z., redaktor izdatel'stva; POLIVANOVA, Ye.B., tekhnicheskiy redaktor; ZELENKOVA, Ye.V., tekhnicheskiy redaktor

[Mathematics, its content, methods, and significance] Matematika, ee soderzhanie, metody i znachenie. Moskva. Vol.1. 1956. 294 p. Vol.2. 1956. 395 p. Vol.3. 1956. 336 p. (MIRA 9:12)

1. Akademiya nauk SSSR. Matematicheskiy institut. 2. Chlen-korrespondent AN SSSR (for Aleksandrov)
(Mathematics)

LYAPUNOV, Aleksandr Mikhaylovich, akademik; SRETENSKIY, L.N., redaktor; KOLMOGOROV, A.N., akademik, redaktor; SMIRNOV, V.I., akademik, redaktor; SUBBOTIN, M.F., redaktor; ISHLINSKIY, A.Yu., redaktor; MIGIRENKO, G.S., kandidat fiz.-mat. nauk, redaktor; PETKEVICH, V.V., kandidat fiz.-mat. nauk, redaktor; KIRNARSKAYA, A.A., tekhnicheskiy redaktor.

[Collected works] Sobranie sochinenii. Moskva, Izd-vo Akademii nauk SSSR. Vol.2. 1956. 472 p. (MLRA 9:6)

1.Chlen-korrespondent AN SSSR (for Sretenskiy, Subbotin).
2.Deystvitel'nyy chlen AN USSR (for Ishlinskiy)
(Dynamics) (Differential equations)